CALIFORNIA PLANT PEST and DISEASE REPORT

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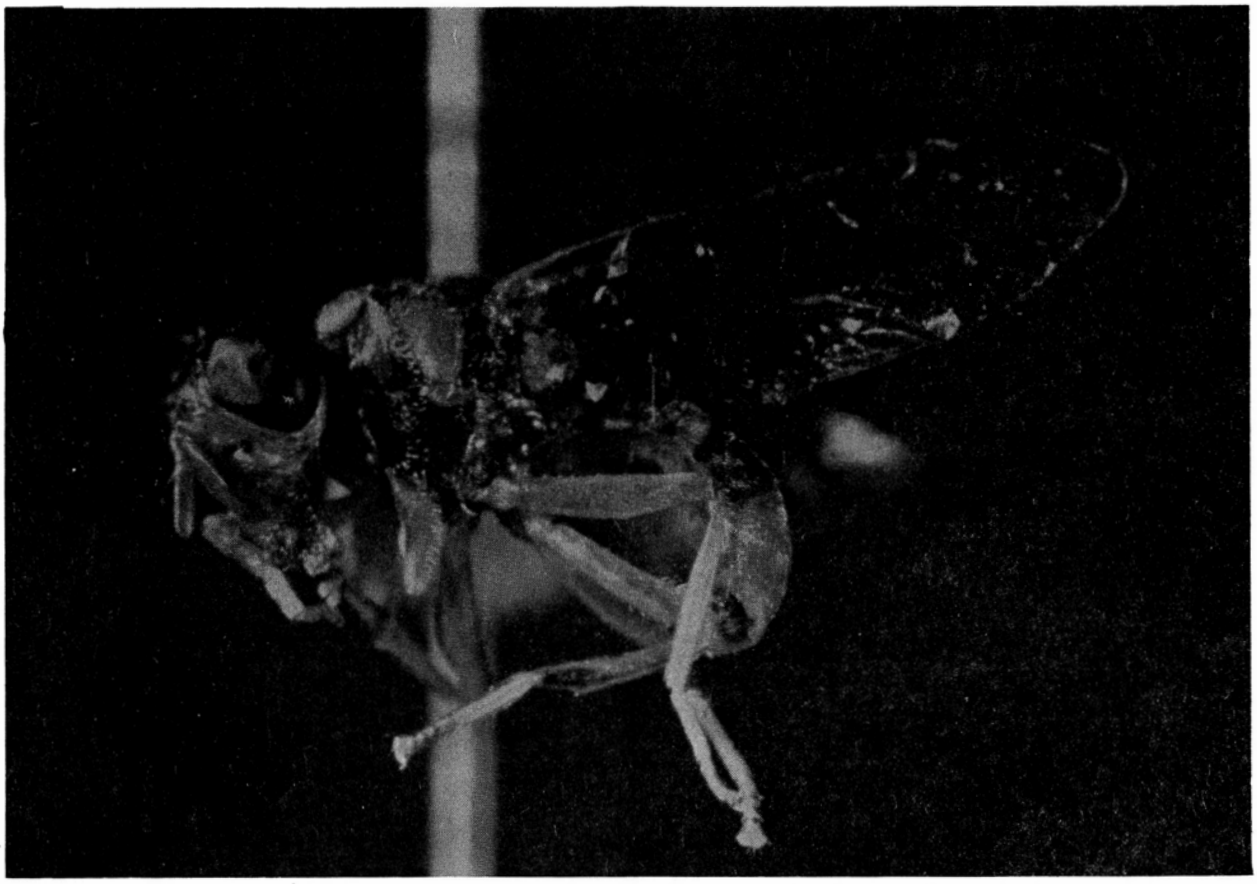

Side view of adult male of the guava fruit fly. See story and another picture on pages 219-222.

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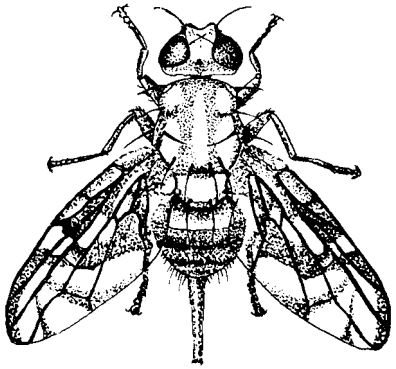
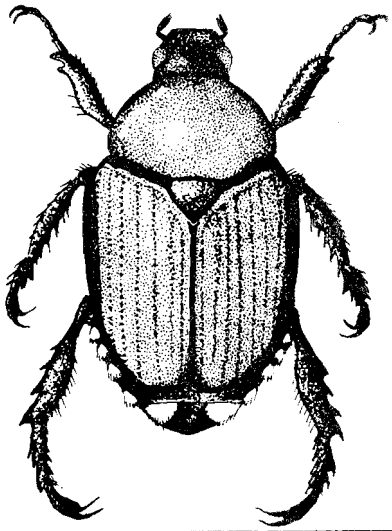


Entomology Highlights



IMPORTANT SCIENTIFIC NAME CHANGE

PEAR PSYLLA, Psylla pyricola now equals Cacopsylla pyricola - The wide-spread and injurious pear psylla, formerly called Psylla pyricola, will now be called Cacopsylla pyricola. Doctors D. Burckhardt and I.D. Hodkinson have just completed a revision of the west Palearctic pear psyllids. The pear psyllids had been much confused for many years. This recent work shows that this group actually comprises seven species, of which C. pyricola has been introduced into North America. Quoting from the authors: "Historically, all the pear feeding psyllids have been placed in Psylla sensu lato. However, several characters of the larva and adult, taken in conjunction with their host-plant association with the Rosaceae, suggest that they do not form a monophyletic group with the type species P. alni and its near relatives which feed on Betulaceae and Buxaceae." This important work appeared in the Bulletin of Entomological Research 76:119-132, 1986.

SIGNIFICANT FINDS

GUAVA FRUIT FLY, Dacus correctus -(Q)- The discovery of this potentially serious fruit pest in Garden Grove constitutes a new State and North American record. The following report by Gary Agosta summarizes the first find:

> "A new species of fruit fly, Dacus correctus (Bezzi), was trapped August 6, 1986, in California. The adult male fruit fly was taken in a Jackson/Methyl Eugenol trap deployed in a peach tree on a Larson Avenue property in Garden Grove, Orange County.

California Department of Food and Agriculture (CDFA) Inspector Beverly Litchfield made the discovery. The trap density was two Jackson/Methyl Eugenol traps per square mile.

CDFA Pest Detection/Emergency Projects personnel are responding to the find by deploying Jackson/Methyl Eugenol and McPhail traps at 50 traps in the epicenter square mile. The surrounding 80 square miles will be increased to five Jackson/Methyl Eugenol traps per square mile."

Several days later, on Saturday, August 9, two more flies were found several miles away. One was collected in a Jackson trap in a peach tree at Westminster by Diana Verity and the other was collected at Midway city by Beverly Litchfield in a Jackson trap in grapefruit.

The following release by CDFA information officer Gera Curry, gives further information on the history of this fly:

"Three fruit flies of the species Dacus correctus have been found in Orange County fruit trees, it was reported today by the California Department of Food and Agriculture (CDFA).

This finding marks the first time this insect, with the common name of guava fruit fly, has been found in the Western Hemisphere.

Normally occurring only in India, Pakistan, Sri Lanka, Thailand and the Philippines, a male guava fruit fly was found August 6 in a Jackson trap in a Garden Grove peach tree. On August 9, two more male guava flies were found in Jackson traps, one in a peach tree in Westminster and another in a grapefruit tree in Midway City.

Scientific literature from Japan lists the first discovery there in 1982 in Philippine mangoes. Since then, 189 individual flies have been found in Japan in 26 lots of 10 species of fruits from four countries. Japan, as well as many other countries, feels the species is being brought in from eggs laid in contraband fruits brought in as gifts from Southeast Asia.

Considered as a significant threat to California citrus, peaches, guava, mangoes, as well as many other exotic fruits, the guava fly is strongly attracted to methyl eugenol and can be treated by male annihilation method, as is Oriental fruit fly. Treatment should begin in Orange County within the week.

The eradication treatment consists of spot bait application to vertical surfaces such as utility poles, trees, and fence posts. This procedure is called "male annihilation" because it uses a sex lure combined with a pesticide to attract and kill the male fly on contact.

CDFA officials noted that recent finds of exotic fruit fly species have a direct correlation with tourists smuggling in contraband fruit and also with first-class mail regulations which permit fruit to be shipped without inspection. Both of these giant loopholes must be closed, officials said, to protect Californians from introductions of exotic fruit flies and subsequent eradication efforts."

The following data adapted from a report compiled by Robert Dowell, CDFA Primary State Entomologist, further clarifies the status of the new fly:

"Hosts:

Aegle marmelos	bael
Zizyphus spp.	jujube (ber)
Ricinus communis	castor bean
Achras zapota	sapodilla (chiku)
Citrus spp. (Nubilis)	citrus
Eugenia jambos	rose apple
E. michelli	Surinam cherry
Psidium guajava	guava
Carissa carandas	Natal plum group (Karanda)
Mangifera indica	mango
Prunus persica	peach
Santalum album	sandal wood

Listed as a major pest of guava and a minor pest of ber. One trap caught 1,509 guava fruit flies in one day in September, 1974.

Trap/Lure:

Guava fruit fly is strongly attracted to methyl eugenol. Our standard OFF traps should work well.

Effective Pesticides:

Acephate, dimethoate, malathion and fenthon are effective as cover sprays against D. correctus. No data on soil drenches using currently registered pesticides.

Analysis

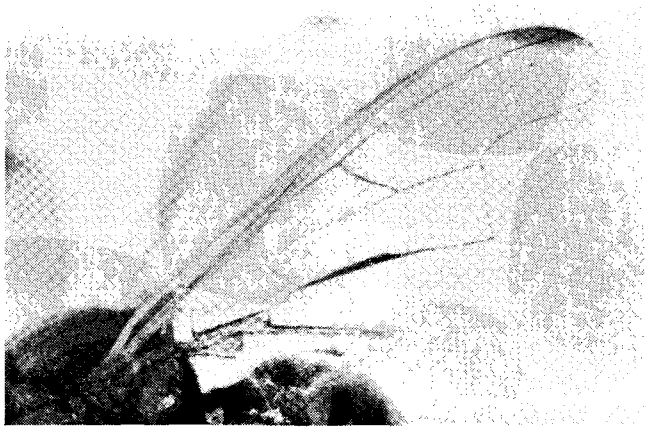
Threat - Difficult to evaluate with so little data - however, based upon its host range, ease of confusion with D. dorsalis and D. zonatus, and the general effects of releasing any organisms from its naturally occurring controls - we can assume that this fly poses a significant threat to California.

Detection

Use standard OFF traps and protocols. Since we know so little about this fly, a density of 25 methyl eugenol baited Jackson traps in the core square mile seems a prudent measure."

Dacus correctus most closely resembles the Oriental fruit fly, Dacus dorsalis, in overall coloration but lacks the dark costal wing band of that species and instead has a single dark spot at the end of the costa at each wing tip.

D. correctus resembles the peach fruit fly, Dacus zonatus, but differs in that the two dark colored facial marks in zonatus are replaced by a dark colored line in correctus.



Wing pattern of D. correctus
Photo by Jim Heath

APPLE MAGGOT, Rhagoletis pomonella -(A)- The eradication program for this serious apple pest is well under way in the north state. Over 160 positive finds have been submitted to the lab this year.

WESTERN CHERRY FRUIT FLY, Rhagoletis indifferens -(A)- Nineteen trapped specimens of this fly have been submitted to the lab this year from Shasta, Humboldt and Del Norte counties. On July 8, Richard Spadoni collected larvae from sour cherries in a commercial orchard at Willow Creek, Humboldt County.

ORIENTAL FRUIT FLY, Dacus dorsalis -(A)- Two flies were trapped during this period, bringing to four the total number of specimens trapped in California this year. The two finds are summarized here from a report by John Pozzi:

> A third Oriental fruit fly (OFF) has been detected this year. The latest OFF was found by Los Angeles County trapper Doug Stone on June 20, 1986, in La Puente. Doug made the discovery while servicing a Jackson/methyl eugenol trap that had been placed in a peach tree along Rama Drive.
>
> A male Oriental fruit fly (OFF) was trapped on July 3, 1986, in Huntington Beach, Orange County. California Department of Food and Agriculture (CDFA) Inspector Mary Edgecomb made the discovery while servicing a Jackson/methyl eugenol trap that had been placed in a nectarine tree on Effingham Drive.

GYPSY MOTH, Lymantria dispar -(A)- The first moth of the year was trapped in Pasadena on June 5 by Dennis Foss. Since that time, 19 adult gypsy moths have been trapped in the State. The finds are enumerated as follows:

#	Location	County	Date	Collector
1	Pasadena	LA	6/5	Foss
1	Fresno	FR	6/19	Guerra
1	Oceanside	SD	6/23	Worchester
8	Encino	LA	6/30	Asakawa
1	Encino	LA	7/3	Penrose/Zadig
1	Berkeley	AL	7/10	Concepcion
1	Palo Alto	SC	7/11	Toth
2	Santa Rosa	SON	7/11	Milligan
1	Vandenberg Village	SBar	7/17	Decker
1	Pleasant Hill	CC	7/16	Atkinson/Adams
1	San Jose	STCL	7/21	McNiel

JAPANESE BEETLE, Popillia japonica -(A)- The good news is that no Japanese beetles were trapped in Sacramento County this year. Hopefully, we are on our way to another successful eradication. So far only one beetle has been trapped in the State this year although that is really surprising considering the number of beetles found in incoming aircraft (See the Exclusion & Detection portion of this issue).

The following report by John Pozzi outlines the only 1986 trapping find:

> The first Japanese beetle (JB) for 1986 has been trapped in California. An adult female beetle was found on July 8 in a JB trap along West Century Boulevard near Los Angeles International Airport. The find is about one-third of a mile from JB trap finds last year. Los Angeles County trapper John Hooper found the beetle alive.
>
> JB trap density in the area is 50 traps per square mile. Since the Los Angeles International Airport area is trapped at a high density because of previous JB finds, the Los Angeles County Department of Agriculture does not plan to deploy additional traps.
>
> California Department of Food and Agriculture Insect Biosystematist Fred Andrews determined that the female beetle was internally fresh and had no ovarian development.

COTTON BOLL WEEVIL, Anthonomus grandis -(A)- The eradication program for this serious pest appears to be progressing favorably. The following report is taken from the project newsletter, Boll Weevil News 4(2):1-2:

> Midseason treatment activities are currently under way in the northern Yuma Valley, the Gila Valley and the Wellton, Arizona regions of the Southwest Boll Weevil Eradication

Project. As of August 1, a total of approximately 1,000 acres in ten fields had probable indications of reproducing boll weevil populations. To contain any established populations, treatments are generally being applied on five day intervals, in conjunction with grower applied treatments. Year to date, boll weevil populations are overall continuing to remain at 95-99% reduction in most project regions as compared to last year.

The next three to six weeks of the program will be critical. Trapping activities and timely treatment activities will be extremely important to maintain the low boll weevil populations.

The enclosed statistical information gives a comparative (1985 vs 1986) report of boll weevils and treatment activities for the project.

WEEK RANGE: 7/20/86 to 7/26/86

BOLL WEEVIL STATISTICAL SUMMARY FOR MID-SEASON 1986 (JULY TO SEPT)

WEEVIL CATCHES

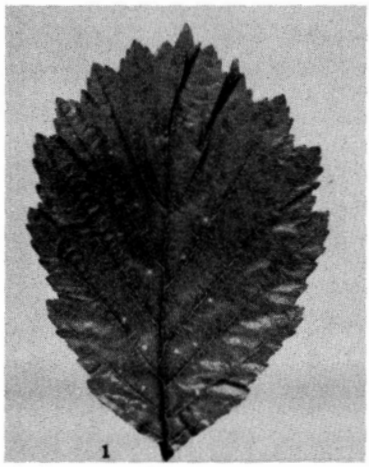
STATE	REG	PREVIOUS TOTAL	1986 THIS WEEK	1985 THIS WEEK	1986 ACCUM TOTAL	1985 ACCUM TOTAL	TREND COMPARED TO 1985
CALIFORNIA							
IMPERIAL	I	1	0	0	0	8	-87.5%
BARD/WH	II	16	0	112	16	4670	-99.7%
BLYTHE	III	5	0	1	5	410	-98.8%
COACHELLA	IV	0	0	0	0	0	

TREATMENT ACTIVITY

STATE	REG	PREVIOUS TOTAL ACRES	1986 THIS WEEK	1985 THIS WEEK	1986 ACCUM TOTAL	1985 ACCUM TOTAL	TREND COMPARED TO 1985
CALIFORNIA							
IMPERIAL	I	200	0	0	200	322	-37.9%
BARD/WH	II	922	0	0	922	5448	-83.1%
BLYTHE	III	634	0	0	634	3480	-81.8%
COACHELLA	IV	0	0	0			

NEW STATE RECORDS

EUROPEAN ALDER LEAFMINER, Fenusa dohrnii -(C)- This insect is a sawfly in the family Tenthredinidae. It is a minor pest of alders in the U.S. and Europe, where it causes blister-like damage between the major leaf veins. It has been known to occur as close as Oregon and Utah for many years. It has three yearly generations in Northern Europe. The California collection was made by Orange County Entomologist Nick Nisson on Alnus glutinosa at Mission Viejo on May 30. According to Nick, the host was also being attacked by a Gracillariid leafminer. The following photographs were taken from Frankenhuyzen (1970) in Ent. Berichten 30:49-52 and show various stages in the development of the leaf mines.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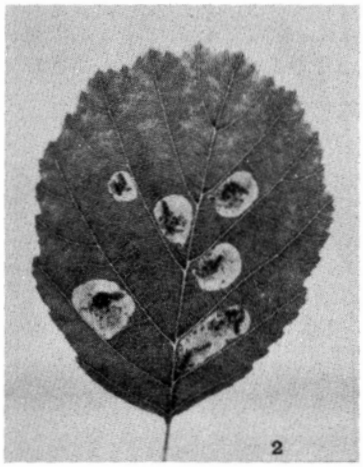
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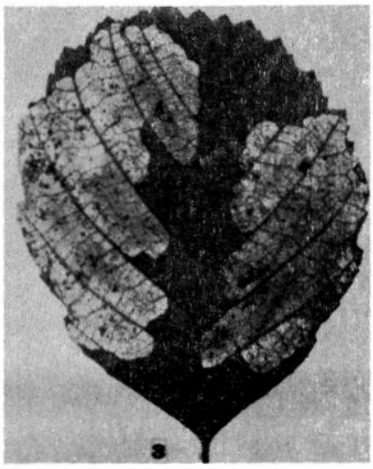
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LEUCAENA PSYLLID, Heteropsylla cubana -(Q)- Yet another new psyllid species has been found in California. The find was made on the Cal-State Fullerton Campus in Orange County by Steve Hill, August 15. The psyllids were heavily infesting albizia trees. The latest information available in the Entomology Laboratory was that most species in the genus were not identifiable specifically. However, when specimens were sent to the Systematic Entomology Laboratory in Beltsville, Maryland, it was learned that two graduate students in Britain have studied the New World forms and a key to the species is available in their as yet unpublished theses. On this basis Dr. D.R. Miller of SEL identified the psyllid as H. cubana. The species was described by Crawford in 1914, based on several collections from Cuba. It is not known whether the psyllid is native to Cuba or to mainland America.

The psyllid is common in South America, Hawaii and a number of other Pacific islands including the Philippines. It is apparently a very serious pest of Koa-Haole or lead tree, Leucaena glauca in Hawaii. Koa-Haole is used extensively for cattlefeed and firewood and depredations by the psyllid caused some serious economic losses. However, an effective bio-control program is now in effect in Hawaii.

The species can be expected to cause economic problems in the State as it becomes more widespread. Early implementation of a bio-control program may alleviate losses.

The new psyllid is light yellow and resembles the acacia psyllid, Psylla uncatoides, and it can be expected to occur on many of the same hosts. The new psyllid differs from acacia psyllid by lacking darker coloration especially in the wings, except for black markings at the junction of the head and prothorax and black apical tarsal segments; by having a deeply cleft male clasper; and by having practically no development of the genal cones on the head. Acacia psyllid has much darkened coloration and has a distinctive fumose wing pattern; the male claspers are not cleft; and the genal cones are weakly produced.

It can be distinguished from other members of the Heteropsylla because of a sclerotized tooth on the posterior apex of the outer cleft of the male clasper.

NEW COUNTY RECORDS

ASPARAGUS APHID, Brachycolus asparagi -(A)- This serious pest of asparagus has been found for the first time in Sacramento County in the towns of Carmichael, Fair Oaks and Rancho Cordova by Sacramento Biologists Zukin, Lubinske and Manger. The actual first record was collected in Carmichael on July 22 by Larry Manger.

Collections from Davis in August by Benson and Souza-Cole constitute a new record for Yolo County.

The aphid now occurs in Riverside, Kern, Fresno, Kings, Madera, Imperial, Tulare, Sacramento and Yolo counties. For more information on the economics and history of this insect see C.P.P.D.R., November 1984:p.142-3.

CLOUDYWINGED WHITEFLY, Dialeurodes citrifolii -(A)- First found in San Diego County at Point Loma in 1985 [C.P.P.D.R. 4(2):53-55], and later in Orange County [C.P.P.D.R. 4(5-6):168], this citrus pest has now been found in Los Angeles County. The new record was established by Jim Wiseman who collected specimens on citrus at Torrance on May 1. According to Los Angeles County Entomologist Rosser Garrison, the whitefly appears to be well established.

KUNO SCALE, Eulecanium kunoense -(B)- Found for the first time in Napa County at Napa on May 27 by Dave Whitner. Previously infested counties include Alameda, Butte, Contra Costa, Lake, Sacramento and Santa Clara.

BALSAM WOOLLY APHID, Adelges piceae -(Q)- Found for the first time in Sacramento County in Capital Park by G.M. Buxton and R.J. Gill an Abies nordmanniana, July 17. It is actually not a true aphid but is placed in the closely related Homopteran family Adelgidae by most taxonomists. The insect is often a pest of true firs in other areas of the U.S. Because of its potential, the California Department of Forestry has voiced their concern. See the following report by George Buxton, CDFA:

> The Balsam Woolly Aphid, Adelges piceae (Ratz), was recently found as an extremely heavy infestation on a true fir (Abies sp.) in Los Altos, Santa Clara County. This find has caused concern with the California Department of Forestry. The CDF is interested in finding the distribution of this insect in California in order to help protect native stands of true fir.
>
> This aphid is a European species that has become widely established in North America where it is highly destructive to several species of true fir. During the late 1950's an outbreak in Southeastern Washington killed an estimated 1.5 billion board feet of timber which could not be salvaged.
>
> A. piceae feeds on the stem, branches, and twigs. During feeding it injects a salivary substance into the tree which causes calluses and gall-like formations on the twigs and branches. On the bole, dense red rings similar to compression wood are formed. Bole infestations may be very heavy and are easily detected by the white wool. Such infestations usually kill the tree in a few years. Branch and twig infestations often cause gouting which progressively weakens a tree over a long period of years.
>
> There are two to four generations per year in the west, all on true fir. Distribution apparently is mostly by wind during the crawler stage. All individuals are females, hence it only takes one to form a new colony (parthenogenetic).
>
> CDFA records show this aphid at Golden Gate Park, San Francisco County, and Hillsborough, San Mateo County before 1928. It was found in Palo Alto, Santa Clara County in 1934, and at U.C. Berkeley, Alameda County in 1958. It was found as a very light infestation in Capitol Park, Sacramento County, in July of this year where it appeared as a tiny woolly mass in a bark crevice about five feet above the ground.
>
> The California Department of Forestry would appreciate our help in looking for the aphid in California. Please send collections by the usual route through the CDFA Analysis and Identification Branch.

KUWANA OAK SCALE, Kuwania quercus -(C)- This rare and unusual scale was found for the first time in San Joaquin and San Mateo counties. The most recent find was made by E. Lauritzen in San Mateo on chestnut in early July. The following information on the San Joaquin County collection indicates pertinent information about the species itself and about the interesting aspects of the new find:

In late May, 1986 Plant Pathologist Dr. Dan Opgenorth, with the help of Agricultural Inspector Ray Pietersen, discovered the scale insect Kuwania quercus in cracks and chambers deep within the bark of chestnut trees near Linden, San Joaquin County, which represents a new county record and a new host association for this pest. The chestnut trees are part of an 8-acre commercial orchard that was recently found infested with chestnut blight. Dan brought the specimens to Homopterist Ray Gill, who made the determination and supplied the following information: The scale insect is a bright red to reddish orange species of the family Margarodidae. The scale is apparently native to Asia, where it was first found in Japan (1902) and later in Taiwan and China, infesting oak in each case. In 1965, it was found for the first time in the United States in California along Highway 128 in Putah Creek Canyon, Solano County, by Tokuwo Kono on oak. Later, it was collected along Highway 181 near Napa, Napa County, and once again on oak. No other localities or hosts were known for this scale until now.

This new find raises some interesting questions about the possible range of the species in California, suggesting that it may be extremely widespread on oak and chinquapin trees throughout central and northern California. The chestnut trees of course were never anywhere near the known scale infestations along Highway 128. Historically, there has been some doubt as to whether the California specimens are conspecific with Kuwania quercus from the Orient. If they are the same, how did the species ever get to California and, how did it come to be so "apparently" widespread?

Although of basic scientific interest to Coccidologists, the scale is a concern for the pathologists. The reddish orange color of the scale is very similar to the yellow-orange color of the asexual pycnidial stages of the chestnut blight fungus. As a result of the color similarity of the two organisms and because the presence of the pycnidial stages on the bark are used as a detection/survey tool for the disease, field surveying for the disease could be hampered.

MEDITERRANEAN MINT APHID, Eucarazzia elegans -(C)- Collected for the first time in San Luis Obispo, San Luis Obispo County on catnip, May 2 by Rusty Hall. For more information on this pest of the mint family, see the report by Eldon Reeves (C.P.P.D.R., 1985, 4(2):56-58.

PEPPER TREE PSYLLID, Calophya schini -(C)- Collected for the first time in Santa Clara County at San Jose on April 22 by Tassan, Beach and Palacius. Collected for the first time in San Luis Obispo, San Luis Obispo County in early July. The collection was made by R. Tassan and M. Pitcairn of the University of California. Richard Tassan is currently involved in investigations leading to the possible introduction of natural enemies for the control of this pest, which is becoming a serious problem on California pepper trees. See C.P.P.D.R. 1986, 5(1-2):201.

HONEY LOCUST POD GALL MIDGE, Dasineura gleditchiae -(C)- Collected for the first time in Kern County at Bakersfield by David Daoud on May 28 from sunburst locust.

AN OTITID FLY, Seioptera vibrans -(D)- This black rather non-descript scavenger fly has been collected for the first time in Castro Valley, Alameda County and San Pablo, Contra Costa County for new county records. The Castro Valley find was made by A. Peters on June 16. The fly is of no economic importance but it vaguely resembles a trypetid fruit fly when found in a McPhail trap. The only other previous record of this fly is from Modoc County.

A CARPENTER ANT, Camponotus quercicola -(C)- Recorded for the first time from San Joaquin County. The collection was made from a fruit tree at Stockton on March 24 by R. Castro.

OTHER FINDS OF SIGNIFICANCE

WHITE GARDEN SNAIL, Theba pisana -(A)- Over 80 submissions of this imported snail pest have been made this year. The submissions resulted from survey work related to the white garden snail eradication program currently under way in San Diego County. Collections have been made in the cities of Lakeside Santee, Mission Hills, Oceanside, Encanto, Hillcrest, El Cajon and San Diego.

MARITIME SNAIL, Hellicella maritima -(Q)- This snail has been found occasionally in San Diego County, usually in association with surveys for white garden snail. Collections have been made this year in Santee and El Cajon.

GARDEN LEAFHOPPERS, Empoasca spp. -(C)- Apparently it has been a very good year for Empoasca leafhoppers. This group of hoppers are small (2 mm) and are usually bright leaf-green. Often quite common, their populations have literally exploded both late last summer and again this year. Arnold Morrison, leader of the beet leafhopper control program, mentioned that severe losses to sugar beets occurred last year in the San Joaquin Valley. This spring, large populations developed on sugar beets, cotton and tomatoes in the Imperial Valley. These were identified as the southern garden leafhopper, Empoasca solana. Later, Dr. Charles Summers,

U.C. Extension, submitted samples from large populations on several crops in the San Joaquin Valley. Sugarbeets were found infested with Empoasca solana while alfalfa was found infested with the potato leafhopper, Empoasca fabae.

Later collections in Imperial County by Eric Natwick, farm adviser and Dr. Robert Flock, Imperial County Entomologist, showed the presence of yet another species, Empoasca mexara, on alfalfa. The potato leafhopper, E. fabae and E. mexara are two apparently closely related species which appear to prefer feeding on alfalfa, while E. solana is apparently the most common Empoasca on other crop hosts. Economic losses from all species have been severe in these areas over the last year and a half. Not only are the high populations injuring the crops directly, but clouds of the hoppers are a nuisance to field workers. The hoppers tend to get into the ears, nose and mouth of the workers, and breathing may become difficult.

AZALEA BARK SCALE, Eriococcus azaleae -(B)- This occasionally serious pest of azaleas was submitted by an Oroville city employee, Jack Lowe. Specimens were collected apparently on city property on May 29 and were submitted to CDFA via Dave Adams, California Division of Forestry.

During this period, a number of A, Q and B rated pests have been found in commercial nurseries. These finds are assumed to be on the hosts on which they originally entered the state. Eradicative procedures have been undertaken.

AN ORCHID APHID, Sitobion luteum -(Q)- Collected from orchids at Thousand Oaks, Ventura County by D. Cozzola on May 13.

RED WAX SCALE, Ceroplastes rubens -(A)- Three separate collections were made by H.F. Kobayashi at a nursery in Sebastopal, Sonoma County. Collections were made on Schefflera and Brassaia on May 5 & 9 and June 4.

MAGNOLIA WHITE SCALE, Pseudaulacaspis cockerelli -(A)- Collected by A. McClure on Areca palm at Malibu, Los Angeles County on July 10.

IMPORTED MEALYBUG, Pseudococcus importatus -(A)- Collected by D. Coccola from orchids at Thousand Oaks Ventura County on May 13.

McKENZIE MEALYBUG, Dysmicoccus mackenziei -(Q)- Collected at Rowland Heights, Los Angeles County in quarantine from Coarsegold, Madera County by D. Papilli from Tillandsia on June 11.

AN ARMORED SCALE, Pseudoparlatoria sp. -(Q)- Collected from Tillandsia chiapensis at Chula Vista, San Diego County by Jim Kenyon on June 9.

AN ORCHID SCALE, Parlatoria sp. -(Q)- Collected from Paphiopedilum orchids at Carmichael, Sacramento County by Sue Zukin on July 25.

A BROMELIAD MEALYBUG, Nipaecoccus sp. -(Q)- Collected on bromeliads at Rowland Heights, Los Angeles County by L. Simon and R. Garrison on June 27.

CHINESE WAX SCALE, Ceroplastes sinensis -(B)- Collected on citrus at a nursery in Camarillo, Ventura County by M. Hixson on June 27. The interesting aspect of this collection is the fact that the infested tree came from Fallbrook, San Diego County (not presently known to occur in San Diego County) several months prior.

ALAZON MEALYBUG, Dysmicoccus alazon -(B)- Collected from bananas in a Lucky Store in Castro Valley, Alameda County by S. Jones on June 6.

SIGNIFICANT FINDS IN OTHER STATES

DODONEA WHITEFLY, Aleurothrixus sp. - Carl Olson of the University of Arizona forwarded a whitefly sample to the Entomology Laboratory for identification. The whitefly was collected June 10 from hop bush (Dodonea) in Tucson. Homopterist Ray Gill determined it to be an undescribed species of Aleurothrixus near floccosus (woolly whitefly). A quick check with Steve Nakahara, USDA, SEL, Beltsville, Maryland, revealed that this species was collected once before in Arizona at Mesa in the early 1950's and on the same host. It is reported to occur commonly in Sonora, Sinaloa and other arid areas of western Mexico, where it is frequently collected on Mexican limes. This find in adjacent Arizona and Mexico amounts to yet another potential whitefly pest of California citrus. The new whitefly is almost indistinguishable from woolly whitefly in the field. Since the species is undescribed, interested taxonomists should contact the lab for distinguishing characteristics.

EXCLUSION AND DETECTION

GYPSY MOTH, Lymantria dispar -(A)- The following chart outlines the quarantine interceptions for the period May to July.

County	Origin	Date	Stage	Collector
CC	Massachusetts	5/6	E	Ziegler
CC	New Jersey	5/8	E	Ziegler
SD	?	5/15	E	Carr
CC	New Jersey	6/9	E,L	Ziegler
CC	New Jersey	6/16	E	Ziegler
O	New Jersey	6/17	E	Harris
O	Connecticut	6/18	L	Clodt
CC	New Jersey	6/23	L	Ziegler
ED	New Jersey	6/23	P	Caswell
SD	Connecticut	6/28	P	Johnson
SLO	Connecticut	7/2	L,P	Hall
Pla	Connecticut	7/2	E,L,P	Marion, Spencer
CC	New Jersey	7/2	E,P	Ziegler
SLO	Maryland	7/6	E,P	Hall
Sac	Massachusetts	7/9	L,P	Zukin
CC	Massachusetts	7/10	P	Ziegler
Sac	Connecticut	7/10	L,P	Scribner
SD	?	7/11	L,P	Redding
Sac	Maryland	7/14	P	Zukin
B	Massachusetts	7/14	L,P	Mattoon
Pla	New York	7/14	E,P	Henderson
CC	New Jersey	7/15	E,P,A	Ziegler
O	New Jersey	7/18	L,P	Fernandez
Sac	New York	7/21	L,P	Zukin
Sac	New York	7/24	L,P	Zukin
O	New York	7/24	E	Harris
Ala	Maryland	7/25	A	Hansen
V	Massachusetts	7/28	L,P	Coccola
CC	Rhode Island	7/31	E	Ziegler

TENT CATERPILLAR, Malacosoma sp. -(Q)- Collected seven times during this period during gypsy moth detection. Origins were Pennsylvania, Maryland, Virginia and Michigan. Collectors were Zukin, Guerra, Jensen, Sorracino, Morton, Jansen, Ratliff and Burdett.

JAPANESE BEETLE, Popillia japonica -(A)- Through the end of July, 3,097 beetles have been intercepted on incoming flights at various airports, 2,851 from Ontario Airport alone. See the following report and the breakdown of interceptions by airport, prepared by Gary Agosta.

> Over a four day period, July 22 through 25, two thousand eight hundred fifty-one (2,851) Japanese beetles were collected at the Ontario Airport. The beetles were collected from United Parcel Service flight #2910 that originates in Louisville. The reason for the large number of beetles

arriving on Louisville flights is currently being investigated. California Department of Food and Agriculture Associate Entomologist Gene Drake, Agricultural Inspector Doug Sullivan, and San Bernardino County Agricultural Biologist D. Scott Zinsmeyer discovered the beetles.

SUMMARY - 1986 JAPANESE BEETLE FINDS

County	Adults Trapped	Date Last Adult Trapped	Number Airport Interceptions	Date Last Airport Interceptions
Alameda	0	--	106	7-21-86
Los Angeles	1	7-8-86	14	7-27-86
San Bernardino	0	--	2,968	7-25-86
San Mateo	0	--	7	7-29-86
Santa Clara	0	--	2	7-17-86
	1		3,097	

A SCARAB BEETLE, Phyllophaga sp. -(Q)- Sixteen (16) interceptions of these beetles were made in this period during detection for Japanese beetle on incoming flights. Collectors were Pieslak, Weston, Monroe, Mailko, Whitaker, Takahashi and Meyer.

ORIENTAL BEETLE, Anomala orientalis -(Q)- Intercepted three times from aircraft during Japanese beetle detection. Collectors were Meyer and Pieslak.

The following scale insects and whiteflies have been intercepted so many times in quarantine during May-July that it is not possible to account for all of the collections and collectors:

Species	Common Name	# Interceptions
Pulvinaria psidii	green shield scale	14
Coccus viridis	green scale	8
Pseudaulacaspis cockerelii	magnolia white scale	23
Howardia biclavis	mining scale	8
Aleurodicus dispersus	spiraling whitefly	4
Geococcus coffeae	A soil mealybug	3
Pinnaspis strachani	lesser snow scale	4

The following ants have also been collected numerous times during this period:

Pheidole megacophala	big-headed ant	8
Paratrechina spp.	an ant	9

A SNAIL, Bradybaena similaris -(B)- Intercepted eight times during this period.

The following A, B and Q pests have been intercepted in Quarantine from May to July

Rating	Species	Common Name	Date	Origin	County	Host	Collector
A	Dacus dorsalis	Oriental fruit fly	7/28	HI	O	Soursop	McRoberts
A	Rhagoletis cingulata	cherry fruit fly	7/14	Penn.	LA	Aircraft	Auera
A	Toxotrypana curvicauda	papaya fruit fly	7/16	Mex	SD	Papaya	Banzhof
A	Ceratitus capitata	Mediterranean fruit fly	7/28	HI	O	Soursop	McRoberts
A	Anastrepha suspensa	Caribbean fruit fly	6/27	FL	SF	Mango	Rios
Q	Tapinoma melanocephalum	black-headed ant	7/8	HI	LA	Flowers	Flowers
Q	Tapinoma melanocephalum	black-headed ant	6/28	HI	SD	Coconut	Kennedy/Walsh
B	Paratrechina longicornis	crazy ant	7/31	HI	YO	Flowers	Zukin
B	Paratrechina longicornis	crazy ant	7/29	FL	SM	Longans fruit	Buerer
Q	Camponotus abdominalis	Florida carpenter ant	7/29	FL	SM	Longans fruit	Buerer
Q	Anoplolepis longipes	long-legged ant	5/21	HI	LA	Schefflera	Calicchia
Q	Parlatoria ziziphi	black parlatoria scale	6/26	Thailand	SF	Citrus	Brown
Q	Parlatoria ziziphi	black parlatoria scale	6/29	Taiwan	LA	Citrus	Moreo
B	Aonidiella aurantii	California red scale	5/12	?	LA	Citrus	Moreo
A	Parlatoria proteus	sansevieria scale	5/13	HI	SAC	Palm	Bianchi
A	Aspidiotus destructor	coconut scale	5/8	Mex	SD	Plantano	Geraty
A	Aspidiotus destructor	coconut scale	6/25	HI	SJ	Palms	Brown
Q	Hemiberlesia ocellata	an armored scale	4/21	?	SD	Banana	Rhys
Q	Aspidiotus excisus	aglaonema scale	5/21	Guatemala	SD	Aglaonema	Boch
B	Comstockiella sabalis	palmetto scale	7/28	FL	PLA	Palms	Henderson
Q	Abgrallaspis sp.	an armored scale	7/18	Guatemala	RIV	Bromeliad	Reeves/Chandler
A	Ischnaspis longirostris	black thread scale	6/27	Canada	SD	Mango	Banzhof
Q	Aonidiella inornata	inornate scale	6/20	?	SF	Lemons	Brown
Q	Pinnaspis buxi	box wood scale	6/30	HI	MER	Dracaena	Watkins
A	Lopholeucaspis cockerelli	Cockerell scale	4/30	HI	SJ	Palm	Burns/Davelvy
Q	Lepidosaphes tokionis	croton scale	7/10	HI	SJ	Croton	Croce
Q	Abgrallaspis sp.	an armored scale	7/18	Guatemala	RIV	Bromeliad	Reeves, et al
Q	Diaspis sp.	an armored scale	7/18	Guatemala	"	"	"
Q	Opuntiaspis sp.	an armored scale	7/18	Guatemala	"	"	"
Q	Acutaspis sp.	an armored scale	7/18	Guatemala	"	"	"
Q	Asterolecanium epidendri	a pit scale	7/16	Brazil	SD	Orchids	Kenyon
Q	Conchaspis angraeci	angraecum scale	7/16	Brazil	"	"	"
Q	Rhizoecus americanus	a soil mealybug	5/2	HI	LA	Palm roots	Rawald
Q	Rhizoecus americanus	a soil mealybug	5/28	HI	"	"	"
A	Pseudococcus importatus	imported mealybug	5/11	Costa Rica	LA	Pothos	Matsumoto
B	Ferrisia virgata	stripped mealybug	6/3	Costa Rica	SBO	Dracaena	Nash

Rating	Species	Common Name	Date	Origin	County	Host	Collector
Q	Pseudococcus sp.	aglaonema mealybug	7/29	FL	SM	Longans fruit	Buerer
Q	Pseudococcus sp.	aglaonema mealybug	4/29	FL	SD	Pouteria sapota	Cooke
Q	Aleurotulus sp.	anthurium whitefly	6/18	HI	YO	Anthurium	Souza-Cole
Q	Aleurodicus sp.	an orchid whitefly	7/18	Mex	SD	Orchid	Kenyon
Q	Aleurotrachelus sp.	a whitefly	7/20	Mex	"	"	"
B	Siphanta acuta	torpedo bug	6/20	HI	SAC	Cut foliage	Jensen
B	Siphanta acuta	torpedo bug	5/5	HI	ALA	Cut foliage	Musso
Q	Melormenis antillarum	a flatid planthopper	5/1	HI	SJ	Ficus	Hudson
Q	Amorbia emigratella	Mexican leafroller	6/25	HI	LA	Basil	Wiseman
Q	Bucculatrix sp.	a leaf skeletonizer	7/9	MA	SAC	Outdoor furn.	Zukin
Q	Chrysodeixis chalcites	green garden looper	5/20	HI	SD	Ti	Boch
Q	Chrysodeixis chalcites	green garden looper	6/11	HI	SAC	Cut foliage	Jensen/Sarracino
Q	Argyrotaenia sp.	a leafroller	4/30	FL	SD	Fern	Kennedy
Q	Orgyia sp.	a tussock moth	7/21	NY	SAC	OHA-Auto	Zukin
Q	Apamea sp.	a cutworm	7/2	NY	SM	Aircraft	Takahashi
Q	Crambus sp.	a webworm	6/22	___	SM	Aircraft	Takahashi
Q	Cochylis sp.	a cochylid moth	4/28	FL	V	Oak catkins	Hillis
Q	Cochylis sp.	a cochylid moth	4/29	FL	SBO	Fern	Nash
Q	Acleris sp.	a leafroller	4/30	FL	SD	Fern	Kennedy
Q	Ereunetis flavistriata	a tineid moth	4/21	HI	LA	Coconut	Papilli
Q	Myocalandra taitensis	a coconut weevil	4/21	HI	LA	"	"
Q	Phyllophaga sp.	a scarab beetle	5/28	KAN	SD	Zoysia	Walsh
Q	Phyllophaga sp.	a scarab beetle	5/29	KAN	CC	Zoysia	Musso
Q	Phyllophaga sp.	a scarab beetle	7/7	KY	ALA	Aircraft	Pieslak/Weston
Q	Orchidophilus sp.	an orchid weevil	5/15	HI	STCZ	Orchid	Morton
Q	Sybra alternans	a longhorned beetle	5/15	HI	SON	Schefflera	Kobayashi
Q	Cerotoma trifurcata	bean leaf beetle	7/9	IL	ALA	Aircraft	Pieslak/Nechelson
Q	Araecerus fasciculatus	coffee bean weevil	7/16	China	SD	Persimmons	Taylor/Rys
Q	Conotrachelus sp.	a weevil	6/4	Costa Rica	SBO	Packing	Nash
Q	Serica peregrina	a scarab beetle	6/26	OH	SD	Aircraft	Meyer
Q	Diploptera punctata	a beetle roach	5/2	HI	SD	Ficus	Kennedy/Walsh
Q	Eurycipitia sp.	a mirid bug	5/22	TX	SD	Orchid	Kennedy/Walsh
Q	Neostylopyga rhombifolia	harlequin roach	5/30	Mex	SD	_____	Banzhof
Q	Coptosoma sp.	a plant bug	6/26	HI	SF	Herbs	Rios
Q	Veronicella sp.	a slug	5/27	HI	LA	Cilantro	Wiseman

The following insects and mollusks are "A" or "Q" rates pests intercepted between May and July in quarantine which were not immediately identifiable to species because of life state, condition or lack of comprehensive taxonomic studies of the groups.

Rating	Species	Common Name	Date	Origin	County	Host	Collector
Q	Homoptera	Homoptera	7/24	HI	STCL	Ti	Yamasaki
Q	Pseudococcidae	a mealybug	7/10	HI	SD	Palm	Kennedy
Q	Coccidae	a soft scale	5/22	HI	YO	Cordyline	Zukin
Q	Noctuidae	a cutworm	7/3	HI	O	Eucaplyptus	Fernandez/Seslow
Q	"	"	6/18	HI	SD	Flower lei	Blocker
Q	"	"	7/23	Israel	V	Gypsophila	Schmoll
Q	Artiidae	a woolybear	6/2	VA	TUO	OHA-chair	Anzar
Q	"	"	6/12	NY	STCL	Trailer	Caplan
Q	"	"	7/18	NY	SAC	OHA	Zukin
Q	Pyraustinae	a pyralid moth	5/7	FL	SAC	Palms	Thompson/Braudi
Q	Sesiidae	a clearwing moth	7/9	MI	YU	Raspberry	Storm
Q	Gelechiidae	a gelechiid moth	6/2	China	NA	Baskets	King
Q	Holcocera?	a blastobasid moth	7/18	Guatemala	R	Bromeliad	Reeves/Chandler
Q	Edessa?	a stinkbug	6/19	IN	ALA	Aircraft	Mailho
Q	Acheta?	a cricket	6/16	Thailand	SUT	Shipping crate	Melton/Wilson
Q	Polydesmida	a millipede	4/30	Puerto Rico	SD	Plant material	Kennedy
Q	Mollusca-immat.	snails	5/19	HI	SM	Ficus	Mastrangelo/Buerer
Q	Endodontidae	a snail	7/22	Puerto Rico	V	Dracaena	Hixson

BORDER STATIONS

Kudos this time for Lori Day at the Blythe Station. Following is Lori's story:

> "Don't Mess with Lori - Undeclared houseplants (with live ants) were found hidden among HHGs on a Texas moving van by the tenacious and dedicated Lori Day. The driver was cited for failure to declare the plants. He admitted (while being written up) that the shipper had given him extra money "to try and sneak the plants" into California. Way to go, Lori. We're proud of ya! Sock it to 'em!"

There are many tales to tell about attempts people make to circumvent quarantine regulations. The above account is one. Following are two recent examples dealing with prohibited ferrets:

> "Another "Outlaw" Ferret - On Tuesday (5/13), Norm Rosenbalm rejected a ferret that was part of a household move from Washington to California. After being advised of his options, the owner decided to return his pet out-of-state. When he returned to the station, about 20 minutes later, the driver was asked to pull over for another inspection.
>
> Instead of stopping, he "gunned the car" and raced out of the inspection lanes and down the freeway. Norm called both the CHP and CDFG for assistance. A short time later, a CHP officer brought the vehicle back for inspection. A thorough search failed to find "the furry varmint," although every instinct told Norm that, "it was there somewhere."
>
> When queried about the animal, the owner stated that he had released it near Hilt. Because Hilt is in California, CDFG Warden Chuck Konvalin pressed for more details. When advised of the seriousness of the situation, including the possibility of being "detained" until a judge could be found, the driver finally admitted that his pet was hidden. It had been placed behind the spare tire in a side panel. The "markedly less defiant" owner surrendered his ferret to the warden. (He had now lost his option to take the prohibited animal out-of-state because of the attempt to smuggle it back in after having been rejected earlier).
>
> "As the episode "wound-down," the driver finally entered California, minus his pet, plus an accumulation of three citations with a total of six violations: CHP (speeding), CDFG (2 counts), and CDFA (3 counts). It will be a very expensive lesson for this "sadder, but wiser" man. California quarantine restrictions are for real!

"Ferret Smuggler Foiled - On Tuesday, a ferret was rejected from a New Mexico motorhome at our sister-station in Truckee. Dave Sage "played a hunch" and followed to see if they would return to Reno, as they had promised. Dave saw them turn off toward Squaw Valley and theorized that even the "most lost" New Mexican would not take such a circuitous route to Reno.

He called us with the vehicle information, as well as the license number and description of a California rig that was traveling with the one from New Mexico. When they got to Meyers, we were waiting for them. The California rig was moved out of the local lane (attempting to avoid inspection) and searched. The ferret, which had been transferred enroute, was seized by Terrea Plummer. CDFG warden Bill Hart took the animal for disposal, plus issued a citation to the San Diego man, who now has a July court date in Lake Valley. Great teamwork! We may not get them all....but, we do win big sometimes! "Well Done," to all involved."

BORDER STATION INTERCEPTIONS
(May 1 through July 30, 1986)

			Rating
APPLE MAGGOT	Rhagoletis pomonella	3	A
GYPSY MOTH	Lymantria dispar	107	A
PECAN WEEVIL	Curculio caryae	23	A
HICKORY SHUCKWORM	Cydia caryana	34	A
WESTERN CHERRY FRUIT FLY	Rhagoletis indifferens	557	A
IMPORTED FIRE ANT	Solenopsis invicta	28	A
WHITE GARDEN SNAIL	Theba pisana	1	A
JAPANESE BEETLE	Popillia japonica	6	A
EUROPEAN CORN BORER	Ostrinia nubilalis	1	A
WALNUT HUSK MAGGOT	Rhagoletis suavis	1	A
EASTERN CHERRY FRUIT FLY	Rhagoletis cingulata	2	A
WHITE MARKED TUSSOCK MOTH	Orgyia leucostigma	4	A
COCONUT SCALE	Aspidiotus destructor	3	A
MEXICAN FRUIT FLY	Anastrepha ludens	7	A
CARIBBEAN FRUIT FLY	Anastrepha suspensa	3	A
SWEET POTATO WEEVIL	Cylas formicarius elegantulus	1	A
RUFOUS SCALE	Selenaspidus articulatus	1	A
BLUEBERRY MAGGOT	Rhagoletis mendax	1	A
EASTERN TENT CATERPILLAR	Malacosoma americanum	23	Q
ORIENTAL SCALE	Aonidiella orientalis	3	Q
FLORIDA CARPENTER ANT	Camponotus abdominalis floridanus	2	Q
SPOTTED CUCUMBER BEETLE	Diabrotica undecimpunctata	1	Q
BIGHEADED ANT	Tapinoma melanocephalum	1	Q
ANT	Pheidole pilifera	1	Q
FLORIDA WAX SCALE	Ceroplastes floridensis	1	Q
CICADA	Neocicada hieroglyphica	1	Q
BIG HEADED ANT	Pheidole megacephala	1	Q
SCARAB BEETLE	Anomala albopilosa	1	Q
ORIENTAL BEETLE	Anomala orientalis	1	Q
SNAIL	Zachrysia provisoria	1	Q
LOOPER CATERPILLAR	Rachiplusia ou	1	Q
BEAN LEAF BEETLE	Cerotoma trifurcata	1	Q
PUSS CATERPILLAR	Megalopyge opercularis	1	Q
WEEVIL	Conotrochelus sp.	14	A
WEEVIL	Curculio sp.	1	A
FRUIT FLY	Rhagoletis sp.	1	A
FRUIT FLY	Anastrepha sp.		A
BAGWORM	Thyridopteryx sp.	1	A
LEAFHOPPER	Typhlocybinae	1	Q
TENT CATERPILLAR	Malacosoma sp.	48	Q
ANT	Paratrechina sp.	29	Q
SCARAB BEETLE	Phyllophaga sp.	8	Q
LEAF SKELETONIZER	Bucculatrix sp.	3	Q
FRUIT MOTH	Laspeyresia sp.	1	Q
LEAFHOPPER	Deltocephalinae	1	Q
LEAFHOPPER	Draeculacephala sp.	1	Q
LEAFHOPPER	Macrosteles sp.	1	Q
SPITTLE BUG	Prosapia sp.	1	Q
ARMOURED SCALE	Pseudaonidia sp.	1	Q
WHITEFLY	Aleurotulus sp.	1	Q

			Rating
PECAN PHYLLOXERA	Phylloxera sp.	1	Q
APHID	Cinara sp.	1	Q
ARMYWORM	Spodoptera sp.	1	Q
ANT	Solenopsis sp.	1	Q
COCKROACH	Eluycotis sp.	1	Q
LOOPER	Caenurgina sp.	1	Q
CUTWORM	Agrotis sp.	1	Q
CUTWORM	Euxoa sp.	1	Q
SOD WEBWORM	Crambus sp.		Q
TUSSOCK MOTH	Orgia sp.		Q
SCARAB BEETLE	Anomala sp.		Q
WHITE FLY	Aleurocerus sp.	1	Q
GELECHIID MOTH	Gelechia sp.		Q
WEEVIL	Tyloderma sp.		Q
APHID	Aphis sp.	1	Q
ADELGID APHID	Adelges sp.	1	Q
WOOLY BEAR	Arctiidae	28	Q
TENT CATERPILLAR	Tortricidae	7	Q
GELECHIIDAE	Gelechiidae	3	Q
GRAIN MOTH	Pyralidae	7	Q
WEEVIL	Curculionidae	4	Q
BAGWORM	Psychidae	15	Q
CUTWORM	Noctuidae	4	Q
LOOPER OR MEASURING WORM	Geometridae	1	Q
SHARPSHOOTER	Homalodisca or Paraulacizes	1	Q
SCALE	Diaspididae (cover only)	1	Q
FULGOROID PLANTHOPPER	Fulgoroidae	1	Q
STINK BUG	Pentatomidae	1	Q
LEAF BEETLE	Chrysomelidae	1	Q
CUTWORM	Noctuidae	1	Q
WIREWORM	Elateridae	1	Q
SNAIL	Unknown	1	Q
CALIFORNIA RED SCALE	Aonidiella aurantii	10	B
PURPLE SCALE	Lepidosaphes beckii	19	B
CHAFF SCALE	Parlatoria pergandii	16	B
GLOVER SCALE	Lepidosaphes gloverii	4	B
CRAZY ANT	Paratrechina longicornis	3	B
HOLLY LEAFMINER	Phytomyza ilicis	2	B
STRIPED MEALYBUG	Ferrisia virgata	1	B
CARROT RUST FLY	Psila rosae		
WEEVIL (HUNTING BILLBUG)	Sphenophorus venatus vestitus		
SNAIL	Bradybaena similaris	8	B
SNAIL	Subulina sp.	1	B
SNAIL	Opeas sp.	1	B

NEMATOLOGY LABORATORY

List of nematode type specimens deposited at California Department of Food and Agriculture

by Renaud Fortuner

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The nematode slide collection of the California Department of Food and Agriculture (CDFA Permanent Slide Reference Collection) includes 1,675 slides containing approximately 13,000 specimens in 60 genera and over 200 species. The major nematode orders represented in the collection are Tylenchida, Aphelenchida and Dorylaimida (plant-parasitic species mostly). It also includes a few specimens in Rhabditida and Mononchida.

The collection is used mostly as in-house reference material to assist CDFA scientists in the identification of nematodes from samples examined for regulatory purposes. This collection also contains some type material and, in compliance to Recommendation 72G of the International Code of Zoological Nomenclature, a list of the type specimens is given below.

Some of this material may not be available for loan, because the CDFA loan policy requires that no slide (type or non-type) maybe loaned out, if its absence impairs the primary function of this collection as an in-house reference source. However, visiting scientists are welcome to examine all of the specimens in the CDFA Nematology Laboratory.

List of CDFA Type Material

Species	Number of: slides	females	males	juveniles
PARATYPES				
Californidorus pinguicaudatus Robbins & Weiner, 1978	7	5		7
Helicotylenchus belli Sher, 1966	1	11		1
H. caroliniensis Sher, 1966	2	14		
H. cavenessi Sher, 1966	1	7		
H. rotundicauda Sher, 1966	2	11		
H. minzi Sher, 1966	1	8		
Monotrichodorus vangundyi Rodriguez, Sher & Siddiqi, 1978	2	6	9	2
Thecavermiculatus gracililancea Robbins, 1978	14	10		10*
Tylenchocriconema alleni Raski & Siddiqui, 1975	1	2	1	
Xiphinema coxi Tarjan, 1964	1	2		1
X. ensiculiferoides Cohn & Sher, 1972	1	2		2
TOPOTYPES				
Nacobbus dorsalis Thorne & Allen, 1944	2	2	3	1
Rotylenchus buxophilus Golden, 1956	1	3		4
Telotylenchus ventralis Loof, 1963	1	4	2	

* Also vulval-anal regions face views, body walls and eggs.

STINKHORNS ATTRACT FLIES AND MYCOLOGISTS

by

Darvin DeShazer

Throughout the years, California has been famous for many flies, including the Medfly, the apple maggot fly and now the guava fly. Mycologists have long been aware of other flies, primarily Muscoid flies, that include species in the families Calliphoridae, Sarcophagidae and Muscidae. They are attracted to the stinkhorn fungi. Flies are the insect vector responsible for their spore dispersal. They are apparently attracted by the stinky odor emitted by the gleba of the maturing fungus, land on the sticky slime of the hymenophore (Fig. 1) and pick up spores either by adhesion to their legs or by ingestion. The spores are transported to a suitable growing location where germination occurs and the subsequent growth of the mycelium takes place.

The fruiting body forms as a dirty-white, rubbery egg at the soil line. Its identifying characteristics include:

1. A layer of watery, gelatinous tissue around the periphery just under the skin.

2. Several white, false roots (rhizomorphs) at the bottom of the egg.

3. A characteristic "crack" in the soft shell (peridium) when the fungus "hatches." The emergence of the hymenophore leaves the egg with same looking "crack" in every genus.

The eggs make outstanding gifts. Place an egg in a coffee cup lined with a wet paper towel. In 24-48 hours the egg will "hatch," the fungus will grow to maturity and then stink like malodorous carrion.

The ecological nitch filled by these fleshy, non-gilled basidiomycetes is one of a decomposer. They are saprophytes on well rotted wood, decaying roots and rich organic leaf litter. They are commonly found in the battle zone where grasses and trees compete for space. They are thus found near the edge of forests, in parks and around the base of uprooted trees. Except for the smell and the flies, they have no known harmful effects.

Stinkhorns belong to the order Phallales. They are Gasteromycetes and are related to earthstars, puffballs and the bird's nest fungi. Worldwide the order has six families of fetid pungency, composed of twenty-five genera of cadaveric odor with a current list of one hundred and twenty-six species of stinky stench. A brief summary of the order follows:

Clathracea

- Anthurus - one species, worldwide
- Aseroe - two species, South America, Asia and Australia
- Blumenavia - two species, South America and Africa
- Clathrus - fifteen species, tropical and California

Colus - one species, Mediterranean area
Ileodictyon - two species, Asia and Australia
Kalchbrennera - one species, Africa
Laternea - two species, Central and South America
Linderia - two species
Lysurus - three species, worldwide including California
Pseudocolus - three species
Simblum - one species, tropics

Claustulaceae
Claustula - one species, New Zealand

Gelopellidaceae
Gelopellus - five species

Hysterangiaceae
Hysterangium - forty species, worldwide including California
Phallogaster - one species, Eastern USA
Rhapalogaster - one species, South Eastern USA

Phallaceae
Floccomutinus - one species, Africa
Itajahya - one species, tropics
Mutinus - twelve species, worldwide including California
Phallus - eighteen species, worldwide
Staheliomyces - one species, South and Central America

Protophallaceae
Calverula - one species, Florida
Protubera - six species, tropics
Pseudocolus - three species

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Darvin De Shazer is a graduate student in mycology at Humboldt State University.

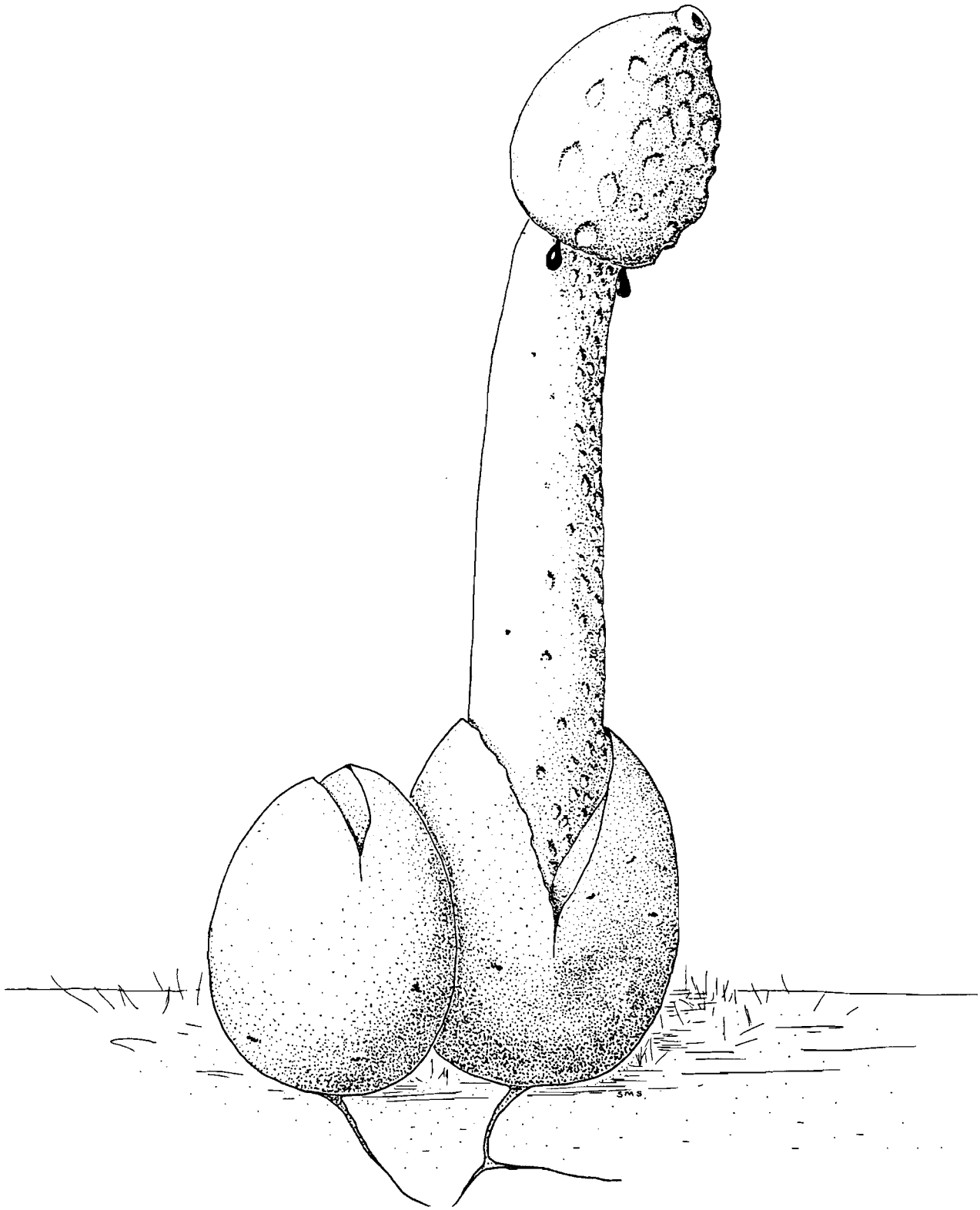


Fig. 1. Stinkhorn fruiting body, showing robbery "egg" with characteristic crack, hymenophore and gleba.

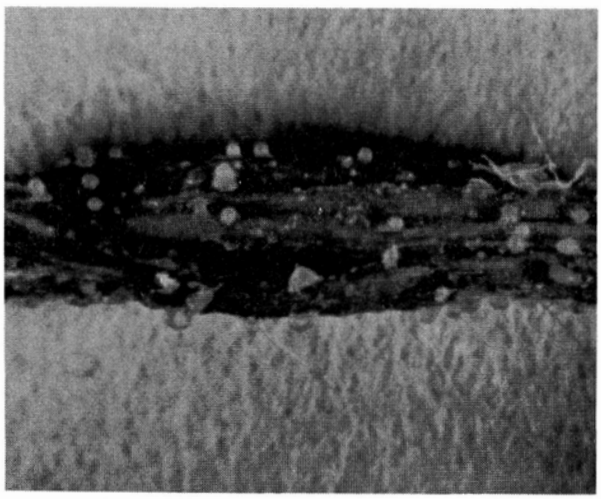
Illustration by Susan M. Sawyer, Agricultural Biological Technician, Analysis and Identification Branch, CDFA.

STRAWBERRY LEAF BLOTCH

by
Darvin DeShazer and Kathleen Kosta

For the fourth time in the last twenty years Zythia fragariae, a fungal organism, has been identified from strawberry plants growing in California. The first occurrence was in 1967 when it was found in Santa Barbara County. The fungus was not detected again until 1982, appearing in Monterey County and in 1984 from Shasta County. This summer it was collected by Kathleen Kosta during a field call in Santa Barbara County. While working with Steve Koike, Santa Barbara County Plant Pathologist, on a celery mosaic virus survey, a visit was made to a strawberry field where diseased strawberry samples were collected.

Zythia fragariae, which carries a CDFA "C" pest rating, causes a purplish to brown leaf spot, which may turn light brown and necrotic on older leaves, in which case the disease is known as "Leaf Blotch." If the outer leaves die, symptoms resemble Verticillium wilt. "Stem End Rot," a more serious disease caused by Z. fragariae (sexual stage: Gnomonia comari) affects the calyx end of the strawberry fruit. Irregular brown areas on the calyx and fruit indicate the presence of the pathogen. Upon establishment of stem end rot in the green fruit, ripening will cease and the fruit will dry up. If the result is already ripe, a soft rot sets in and opens the way to further decay by secondary organisms. Stem end rot and leaf blotch may occur together on the same plant or separately; that is, the leaves and petioles may be infected but not the fruit. On the other hand, fruit may become infected with no evidence of foliar infections. The fungus rarely kills the plant.



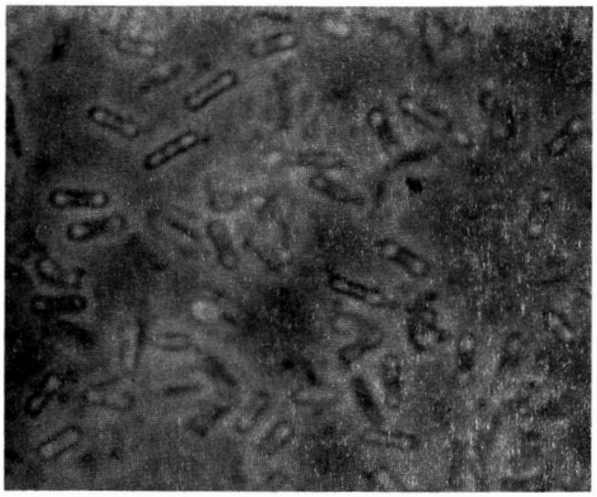


Fig. 1. Petiole of strawberry with pycnidia of Zythia fragariae.
Fig. 2. Biguttulate spores of Zythia fragariae.

This pyrenomycetous ascomycete is in the order Diaporthales. It is the only Gnomonia which does not bear its conidia (the Zythia spore) in an acervulus, but rather forms ostiolate pycnidia with soft, yellow-brown walls and no necks. Conidial masses appear as small yellowish droplets on the stems and petioles (Fig. 1). The short, unbranched conidiophores produce conidia with two oil drops inside ("biguttulate" see Fig. 2). Spores are cylindric with rounded ends and measure 6x2 um.

Gnomonia comari is known to have a worldwide distribution. Alternate hosts of this fungus include several herbaceous members of the rose family. Fungal spores require high humidity to germinate and penetrate the host tissue. Since the fungus is a weak parasite, it usually enters the host through the stomata or wounds. Because moisture and shade are two requirements for disease development, heavy rains or frequent sprinkler irrigation and thick weed growth favor the spread of this disease.

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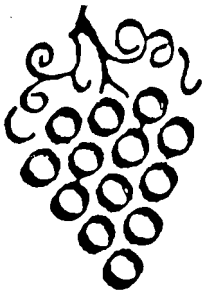

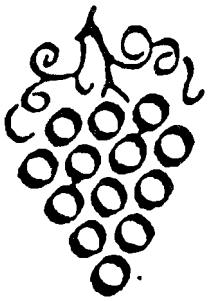

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